to seriously and adversely affect both the quality and quantity of medical and health services, and thus an explosive and destructive crisis may be in the offing. As costs continue to rise, the desperate legislative squeeze upon physicians, hospitals and other providers of health care will increase, on the ill-founded and irrational assumption they are the ones responsible for the runaway costs. Unfortunately, this squeeze can only produce a result counter to what is so naively expected, because physicians, hospital administrators and other providers are actually not the real causes of rising costs, and in fact can do very little about it. Severe governmental pressures on providers to reduce costs which have begun and seem likely to increase sharply, can only have the effect of reducing both the quality and quantity of services, no matter what rhetoric there may be to the contrary. A predictable result of this will be the development of some kind of a counter-reaction on the part of the providers of health care services, and perhaps of consumers as well.

The nature of this counter-reaction cannot easily be foreseen at present. The chain reaction of federal health care legislation has enormous power, and so far this is being exercised with relatively little wisdom or concern for the havoc wreaked. Right now there is no end in sight to this chain reaction of poorly conceived legislation based on simple and too often naive approaches to extraordinarily complex problems. How long the patience of providers, consumers and taxpayers will last remains to be seen. As Gerald Besson says elsewhere in this issue of CALIFORNIA MEDICINE:

> "One of the most pervasive characteristics of society today is the feeling that the entire system is somehow devoid of human control. The individual has a sense of powerlessness that he objects to increasingly. Things are being done, but no one is quite sure how to influence the decision and an air of alienation abounds."

Perhaps this is a good time to note that physicians and other providers are essential to the provision of health care services. It cannot be rendered without them. And it is possibly also worth noting that the practicing physician has a growing sense of powerlessness with respect to the rendering of his services—and that he objects to this increasingly. It is hard to avoid concluding that the potential for an explosively destructive situation may now be in the making.

Bacteriuria — Prevention at What Cost?

THE CHANGING DEMANDS for medical care are being accompanied by changing ways of financing such care. As we face up to the costs of providing for our population what we consider to be optimal care, we are also beginning to face the problems of our deficiencies. Certainly one of the areas of major deficiency is our lack of capacity to prevent chronic illness. The difficulties in effective achievements or research are demonstrated amply by the observation that there is no major chronic disease that now affects large populations in the United States and in the more industrialized countries of the world in which effective preventive action has been demonstrated to reduce morbidity and needless deaths, needless disability, and needless expense. The search for ways to reduce chronic disease is clearly one of the most important missions of medical investigation for the foreseeable future and probably will need to take precedence over many other forms of investigation as we begin to be more conscious of the need for reduction in the costs of medical care by instituting effective action.

It is within this general framework that the problem of bacteriuria and pyelonephritis can be viewed. The review by Stamey and Pfau elsewhere in this issue illustrates well the points of view of accomplished investigators and thoughtful urologists who have examined the available literature and come to their conclusions about selected aspects of the general problem. In every

such review, there will be points of contention amongst investigators, but this need not deter the reader from realizing that the general outlines of the problem are now well accepted by critical workers in the field. These outlines take the form that bacteria enter the bladder and remain there for substantial periods of time in certain individuals. This happens spontaneously in females and in infant males, but seems to occur in adult males only rarely unless instrumentation has provided the basis for the introduction of the bacteria. Local antibacterial defense mechanisms in the form of competitive bacterial flora in the vagina, antibacterial actions of the urethral and bladder mucosa and of the prostate, dilutional effects of high volumes of urine, and several antibacterial mechanisms that operate in the kidney have now been identified, but their relative importance in the pathogenesis of recurrent urinary infection is as yet by no means clear. It is now well established that there are two basic forms of chronic infection of the urinary tract: one that is categorized as relapsing infection in which a given organism remains in the urinary tract despite repeated courses of therapy, and the other categorized as reinfection in which an organism is cleared from the urinary tract but new ones enter at some later date to produce a new infection. In the former type there is a high likelihood of accompanying evidence of renal involvement in the form of pyelographic abnormalities, abnormalities of concentrating ability, and elevated antibody titers. In the latter form of the infection, the rate of evidence of renal involvement is substantially lower.

It is reasonable to suppose, from the available data on the pathogenesis of pyelonephritis, that most instances of renal invasion by bacteria arose consequent to an earlier episode of bacteriuria. This has been documented, particularly in situations in which an indwelling catheter placed in an otherwise sterile bladder introduced gram-negative bacteria which in the course of time produced pyelonephritis, bacteremia and even death. Well controlled studies have shown that if bacteriuria is prevented under such conditions the ominous consequences are greatly reduced. Parenthetically, it is a dismal commentary on the problems in the use of the fruits of research that almost 15 years after publication of the essential information showing the life-saving value of proper care of the in-lying catheter, it is still necessary to press for the widespread use of such methods as a way of reducing needless morbidity and mortality.

In any event, bacteriuria may lead to pyelonephritis and bacteremia in certain individuals, but it is not clear what the circumstances are that produce this complex. Under natural conditions the rate of renal involvement is relatively low. It is however not as insignificant as is suggested by the accompanying review. There are substantial data to indicate that approximately 10 to 15 percent of pregnant women with bacteriuria have evidence of renal infection by functional and pyelographic studies.

The consequences of recurrent infection must be measured broadly. A certain number of individuals undergo repeated distress, fever, loss of work and loss of adequate function, and such individuals receive some comfort from the knowledge that most infections causing these distressing events do not threaten the integrity of the kidneys. On the other hand, these individuals would gain even more comfort if they were not in a continuous state of apprehension over the likelihood of a recurrent episode. From the point of view of the cost of medical care, the prevention of recurrent episodes by a simple means would probably be of major economic importance simply because complaints involving the urinary tract are among the commonest reasons why adult women seek medical help.

It has been known for many decades that women with acute pyelonephritis will, if pregnant at the time of the acute episode, have an increased likelihood of delivering prematurely. This observation was confirmed years ago for women with asymptomatic bacteriuria. The prevention of acute pyelonephritis, with its accompanying risk of prematurity and increased infant mortality, is relatively simple, and the search for bacteriuria can now be performed by simple dip-slide techniques that are inexpensive and can easily be made part of the normal prenatal care of pregnant women. It is noteworthy that certain countries (invariably those with the most favorable infant mortality rates) are preparing to institute this search as part of normal prenatal care while our country with its larger problems, still struggles with the question of whether this would be feasible. A case for searching for bacteriuria in children is building rapidly, although the effects of treatment are still not clear.

There are many reasons why infections of the urinary tract should be treated and why preventive action is useful. One of these reasons has to do with the prevention of renal failure. This is, however, in economic terms, probably the least important reason (except to the affected patient). In recent years a small number of studies have pointed out that renal failure must be rare as a consequence of bacteriuria, and, therefore, that the problem is negligible. Even a cursory review of the earlier data should have saved many investigators a great deal of trouble. Rates of renal failure in general populations are under 100 per 100,000. Rates of bacteriuria in women, are, in the course of a lifetime, approximately 10,000 per 100,000. Since only a portion of all renal failure could conceivably be due to bacterial infection, it would follow that the likelihood of renal failure as a consequence of bacterial infection would be exceedingly small. However, the rate of rheumatic involvement after streptococcal infection is at present probably no more than 1 percent in the untreated individual; the risk of developing a positive Papanicolaou smear after a negative has been found is probably less than 1 in 10,000.

In brief, the difficult question that must be faced is how much preventive activity is justified for low yields in terms of the prevention of exceedingly serious disease. The problem may be looked at as negligible in statistical terms or as important in terms of the examination of causes of chronic disease. Clearly, the issue cannot be resolved by polemic. It must be resolved by the development of simpler and less expensive means for screening and then by the performance of hard-bitten cost-benefit analyses which will indicate what can reasonably be expected in a given population. Only at that point will it become possible to make useful judgments. We are not close to that point at present although we seem to be approaching it slowly.

Perhaps as we approach it we will be providing to the body politic the kind of information that will permit the making of decisions on rational rather than emotional grounds. And perhaps at that time, we can look forward to decisions related to medical care that will be less political in content.

EDWARD H. KASS, M.D.
Professor of Medicine, Harvard Medical School
Director, Channing Laboratory
Harvard Medical Unit, Boston City Hospital
Boston, Massachusetts 02118

Nettlesome Minority

A PHYSICIAN CONFRONTED by the problem of an unconscious child or adolescent in urgent need of medical attention could pretty well trust his instinct and physicianship in deciding what to do. And that's about as far as his instinct can safely go. For any more complicated set of circumstances having to do with treatment of minors, particularly through the teens and to the attainment of majority, he must turn to good legal counsel to know when he must have permission—"consent"—to treat and who may give that consent. There are so many variables depending upon the status of the minor—who in some circumstances is not a minor at all under the law—and upon the medical condition being dealt with, that a harried physician should have somewhere he can turn for guidance. One place he can turn is to page 49 of this issue of CALIFORNIA MEDICINE. There legal counsel for the California Medical Association have provided what they believe to be the best up-to-date advice on the matter, and they include a most useful table showing what to do in a variety of situations.

One thing more: After the article was written, an appellate court decision had a considerable bearing on one of the items the authors had dealt with. An addendum covering that point was supplied. So a good rule is: Be well advised. And keep current.